

Evaluating information prescriptions in two clinical environments

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APPENDIX C

Additional analysis information

Statistical analysis

To identify differences in baseline characteristics between the information prescription (IRx) and control groups, *z*-tests were used for proportions and *t*-tests for continuous variables. The software provided by Hays [C1] was used to calculate the SF-12 scores. A chi-square test was used to check the success of the block randomization. Chi-square or unpaired *t*-tests were done to look for similarity in the patient profiles between the two studies. The primary outcome variable was participants' overall satisfaction on the exit survey, expressed on an ordinal scale, in which 1=excellent and 5=poor, and treated as a continuous variable in the analyses. All satisfaction questions employed the same scale. Analyses of variance (ANOVA) and regression analyses were performed to assess the effects of the intervention, the covariates, baseline satisfaction, or combinations of these measures on the primary outcome. In each study, a linear regression model was created with the satisfaction score dependent on the satisfaction type (e.g., overall, diagnosis) and study intervention. Variations on this model were composed as well, with potential confounders introduced as independent covariates. Multiple linear regression models were also used to assess the potential impact of the planned covariates and group assignment status on overall satisfaction and to assess differences across satisfaction domains (diagnosis, tradeoffs, etc.). Results are reported as the regression beta-coefficient, with its *P*-value, and overall regression R^2 .

To assess the content of the questions posed by the participants, we focused our analysis on the service logs of the librarians. The analytic method used was based on grounded theory or "progressive focusing" [C2]. Similar questions were grouped together according to the coder's (Craven) perception of the main content of each question or information request and verified by a second reviewer (Lehmann). In cases in which there were multiple and distinct questions within a single request, each question was treated as a separate item.

Similar procedures were followed for open-ended responses in the exit survey. For instance, the response to the question, "Did the information you got at Johns Hopkins change your decisions about your breast cancer? Can you tell us anything about that?," the responses were coded as "Yes" or "No," blinded to arm assignment.

For provider surveys, a summary of each item was calculated. Where possible, these summaries were then compared to those of the participants in the same study or across the two studies using graphs and two-sample *t*-tests.

Regression analysis of satisfaction

A regression model for satisfaction score dependent on satisfaction type and group assignment status (Table 3, online only) showed that the IRx intervention conferred a borderline statistically significant effect ($P=0.047$), lowering all satisfaction ratings by 0.07 ($SE=0.035$; $R^2=0.17$). In this model, the exit satisfaction ratings fell into 3 groups: (1) greater satisfaction: diagnosis, surgery, adjuvant, and overall, with statistically significant beta-coefficients greater than 0; (2) lower satisfaction: psychosocial services and problems, with statistically significant beta-coefficients lower than 0; and (3) equivalent satisfaction: the remainder, with beta-coefficients statistically equivalent to 0. This analysis suggests that with or without IRx services, breast cancer patients rated the information they received regarding diagnosis, surgery, adjuvant therapy, and overall information as better and the information regarding psychosocial problems and services as worse than that regarding radiotherapy and anti-estrogen therapy. In the rating of specific information resources, both inside and outside Johns Hopkins, there were no statistically significant differences between the arms or among the resources (Figure 4).

The regression model assessing the effect of information services beyond overall satisfaction showed that the intervention had a statistically significant effect in raising each satisfaction rating, with a regression beta-coefficient of 0.28 ($SE=0.05$, $P<0.0001$) greater satisfaction (Table 3, online only). There were statistically significant differences for specific services and concerns as well. Mothers rated satisfaction with information about their baby's diagnosis higher (0.27 [$SE=0.13$], $P=0.037$) and about community services and developmental delay lower ($\beta=-0.55$ [$SE=0.14$], $P=0.0012$; and $\beta=-0.32$ [$SE=0.13$], $P=0.02$).

References

- C1. Hays RD, Nelson EC, Rubin HR, Ware JE Jr, Meterko M. Further evaluations of the PJHQ scales. *Med Care*. 1990 Sep;28(9 suppl):S29-39.
- C2. Ash JS, Smith JE, Stavri PZ. Subjectivist approaches to evaluation. In: Friedman CP, Wyatt JC, eds. *Evaluation methods in biomedical informatics*. New York, NY: Springer; 2006. p. 248-66.